

FCC CERTIFICATION
On Behalf of
Shanghai Dacheng RC Model Co., Ltd.

Radio Control Transmitter
Model No.: RZT

FCC ID: XY4RZT

Prepared for : Shanghai Dacheng RC Model Co., Ltd.
Address : No.30 Jiuliting Industry Garden, Lane 1620, Husong Rd.,
Songjiang, Shanghai, China

Prepared by : ACCURATE TECHNOLOGY CO. LTD
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Report Number : ATE20100550
Date of Test : April 6-8, 2010
Date of Report : April 9, 2010

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APPENDIX I (TEST CURVES) (3 pages)

Test Report Certification

Applicant : Shanghai Dacheng RC Model Co., Ltd.
Manufacturer : Shanghai Dacheng RC Model Co., Ltd.
EUT Description : Radio Control Transmitter
(A) MODEL NO.: RZT
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: DC 12V ("AA" batteries 8×)

Measurement Procedure Used:

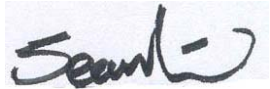
FCC Rules and Regulations Part 15 Subpart C Section 15.227
ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.227 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : April 6-8, 2010

Prepared by : 
(Engineer)

Approved & Authorized Signer : 
(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Radio Control Transmitter
Model Number	:	RZT
Power Supply	:	DC 12V (“AA” batteries 8×)
Operation Frequency	:	27.255MHz
Applicant	:	Shanghai Dacheng RC Model Co., Ltd.
Address	:	No.30 Jiuliting Industry Garden, Lane 1620, Husong Rd., Songjiang, Shanghai, China
Manufacturer	:	Shanghai Dacheng RC Model Co., Ltd.
Address	:	No.30 Jiuliting Industry Garden, Lane 1620, Husong Rd., Songjiang, Shanghai, China
Date of sample received	:	March 23, 2010
Date of Test	:	April 6-8, 2010

1.2. Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen
		Listed by FCC
		The Registration Number is 752051
		Listed by Industry Canada
		The Registration Number is 5077A-2
		Accredited by China National Accreditation Committee for Laboratories
		The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 9, 2011
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 9, 2011
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 9, 2011
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 9, 2011
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 9, 2011
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 9, 2011
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 9, 2011
LISN	Schwarzbeck	NLSK8126	8126431	Jan. 9, 2011

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	N/A
Section 15.209 Section 15.227(b)	Harmonics and Spurious Radiated Emission	Compliant
Section 15.227(a)	Fundamental Radiated Emission	Compliant
Section 15.227	Band Edge	Compliant

Remark: “N/A” means “Not applicable”.

4. HARMONICS AND SPURIOUS RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B)

4.1. Block Diagram of Test Setup

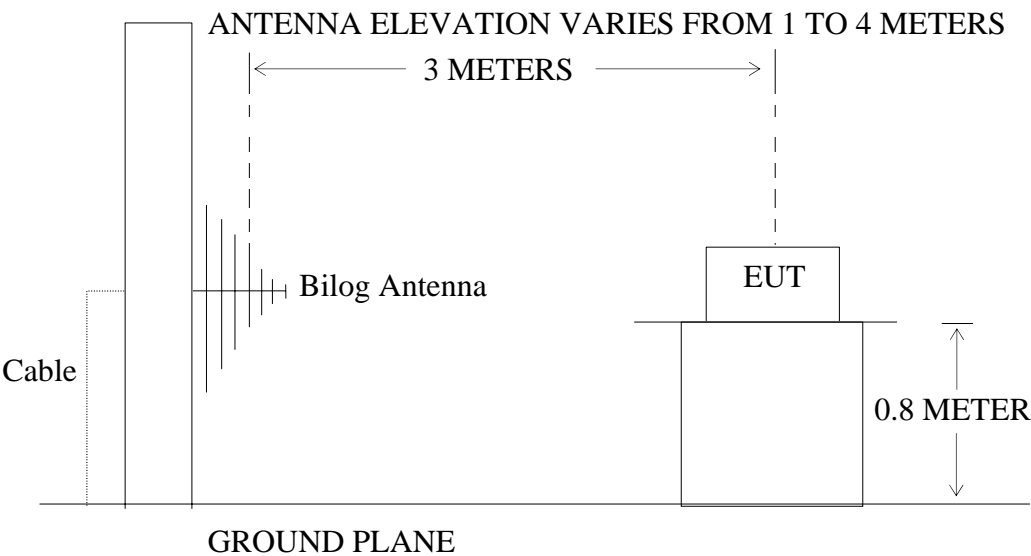
4.1.1. Block diagram of connection between the EUT and simulators



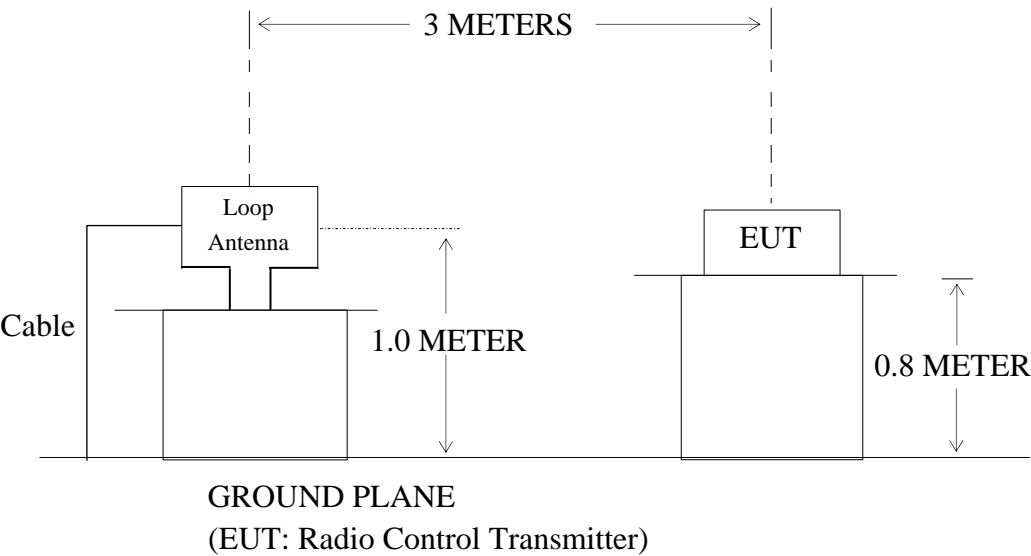
(EUT: Radio Control Transmitter)

4.1.2. Semi-Anechoic Chamber Test Setup Diagram

4.1.2.1. Above 30MHz



4.1.2.2. Below 30MHz



4.2.The Field Strength of Radiation Emission Measurement Limits

4.2.1.The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209.

Radiation Emission Measurement Limits According to Section 15.209(a)

Below 30MHz

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490kHz	2400/F (F in kHz)	2400/377(F in kHz)	300
490-1705kHz	24000/F (F in kHz)	24000/377(F in kHz)	30
1705-30MHz	30	N/A	30

Above 30MHz

Frequency (MHz)	Limit		The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	

4.3.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1. Radio Control Transmitter (EUT)

Model Number : RZT
 Serial Number : N/A
 Manufacturer : Shanghai Dacheng RC Model Co., Ltd.

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in TX mode and measure it.

4.5. Test Procedure

4.5.1. Above 30MHz: The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz is checked.

4.5.2. Below 30MHz: The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. calibrated Loop antenna is used as receiving antenna. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in 9kHz-30MHz.

The frequency range from 9kHz to 30MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

4.6. The Field Strength of Radiation Emission Measurement Results

PASS.

The frequency range 9kHz to 1000MHz is investigated.

Date of Test:	April 6, 2010	Temperature:	25°C
EUT:	Radio Control Transmitter	Humidity:	50%
Model No.:	RZT	Power Supply:	DC 12V
Test Mode:	TX	Test Engineer:	Joe

Below 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.(dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	-	-	-	-	-	-
Vertical	-	-	-	-	-	-

Above 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.(dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	54.5110	23.58	13.20	36.78	40.00	-3.22
Horizontal	81.7690	22.83	13.49	36.32	40.00	-3.68
Horizontal	109.0210	26.34	13.90	40.24	43.50	-3.26
Horizontal	136.2750	25.35	14.62	39.97	43.50	-3.53
Horizontal	163.5260	24.46	14.64	39.10	43.50	-4.40
Vertical	54.5110	23.73	13.20	36.93	40.00	-3.07
Vertical	81.7690	22.60	13.82	36.42	40.00	-3.58
Vertical	109.0210	25.74	14.09	39.83	43.50	-3.67
Vertical	136.2750	25.17	14.62	39.79	43.50	-3.71
Vertical	163.5260	24.67	14.64	39.31	43.50	-4.19

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

5. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

SECTION 15.227(A)

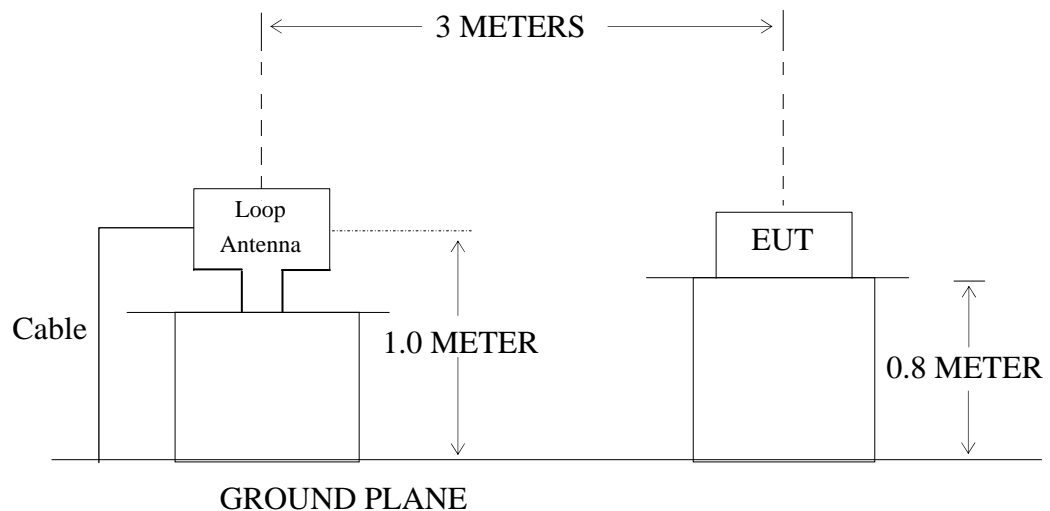
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: Radio Control Transmitter)

5.1.2. Semi-Anechoic Chamber Test Setup Diagram



(EUT: Radio Control Transmitter)

5.2. The Emission Limit For Section 15.227(a)

5.2.1. The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emission apply.

5.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.Radio Control Transmitter (EUT)

Model Number : RZT
Serial Number : N/A
Manufacturer : Shanghai Dacheng RC Model Co., Ltd.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX mode and measure it.

5.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. A calibrated Loop antenna is used as receiving antenna. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in 9kHz-30MHz.

5.6.The Emission Measurement Result

PASS.

Date of Test:	April 6, 2010	Temperature:	25°C
EUT:	Radio Control Transmitter	Humidity:	50%
Model No.:	RZT	Power Supply:	DC 12V
Test Mode:	TX	Test Engineer:	Joe

Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		27.255MHz	
T _{nom} (25°C)	V _{nom} (DC 12V)	(dBμV/m)/(μ V/m) PEAK	(dBμV/m)/(μ V/m) AV
		79.62/9571.9	75.78/6151.8
Limit		100/100,000	80/10,000
Note: Measurement was performed with modulated signal with average detector and peak detector.			

6. BAND EDGES

6.1.The Requirement

6.1.1.The wanted emission within the band 26.96-27.28MHz.

6.2.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.2.1.Radio Control Transmitter (EUT)

Model Number : RZT
Serial Number : N/A
Manufacturer : Shanghai Dacheng RC Model Co., Ltd.

6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 5.1.

6.3.2.Turn on the power of all equipment.

6.3.3.Let the EUT work in TX mode and measure it.

6.4.Test Procedure

The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector. The vertical scale of is set to 10dB per division; the horizontal scale is set to 32kHz per division. Star frequency are 26.96MHz, stop frequency are 27.28MHz. RBW is set to 3kHz, VBW is set to 10kHz.

6.5.The Measurement Result

The EUT does meet the requirement.

The spectral diagrams attached in appendix 1.

APPENDIX I (Test Curves)


ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 966 chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: RTTE #4440

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Radio Control Transmitter

Mode: TX

Model: RZT

Manufacturer: Shanghai Dacheng RC Model Co.,Ltd.

Polarization: Horizontal

Power Source: DC 12V

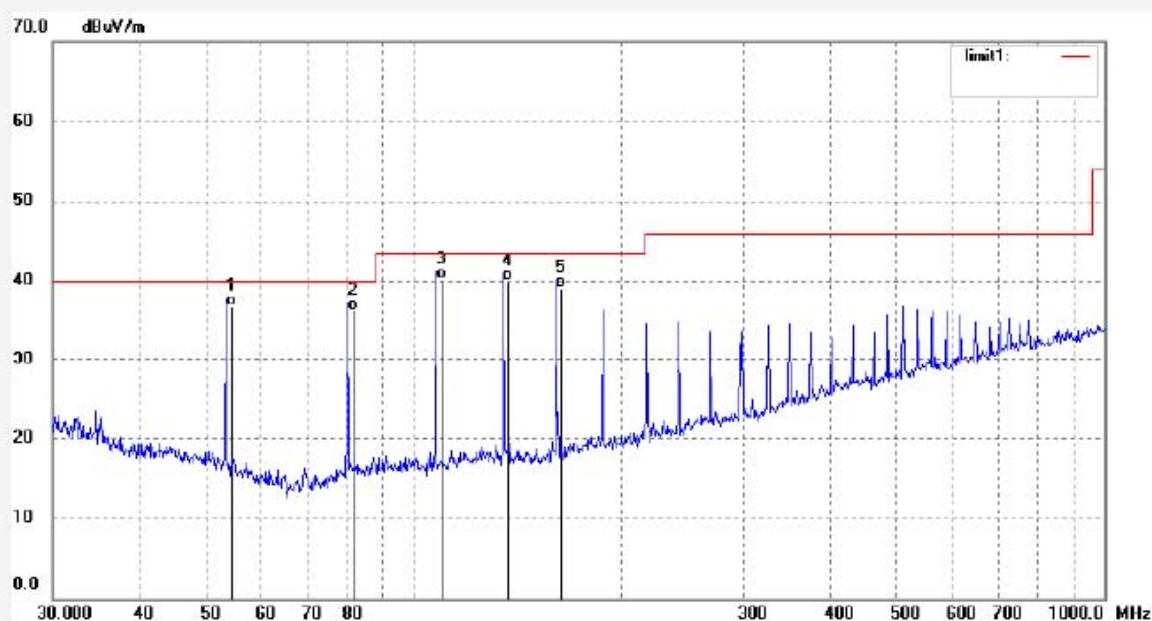
Date: 10/04/06/

Time: 11/38/08

Engineer Signature: Joe

Distance: 3m

Note: Sample No.:100581 Report No.:ATE20100550



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	54.5110	23.58	13.20	36.78	40.00	-3.22	QP			
2	81.7690	22.83	13.49	36.32	40.00	-3.68	QP			
3	109.0210	26.34	13.90	40.24	43.50	-3.26	QP			
4	136.2750	25.35	14.62	39.97	43.50	-3.53	QP			
5	163.5260	24.46	14.64	39.10	43.50	-4.40	QP			


ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 966 chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: RTTE #4441

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: Radio Control Transmitter

Mode: TX

Model: RZT

Manufacturer: Shanghai Dacheng RC Model Co.,Ltd.

Polarization: Vertical

Power Source: DC 12V

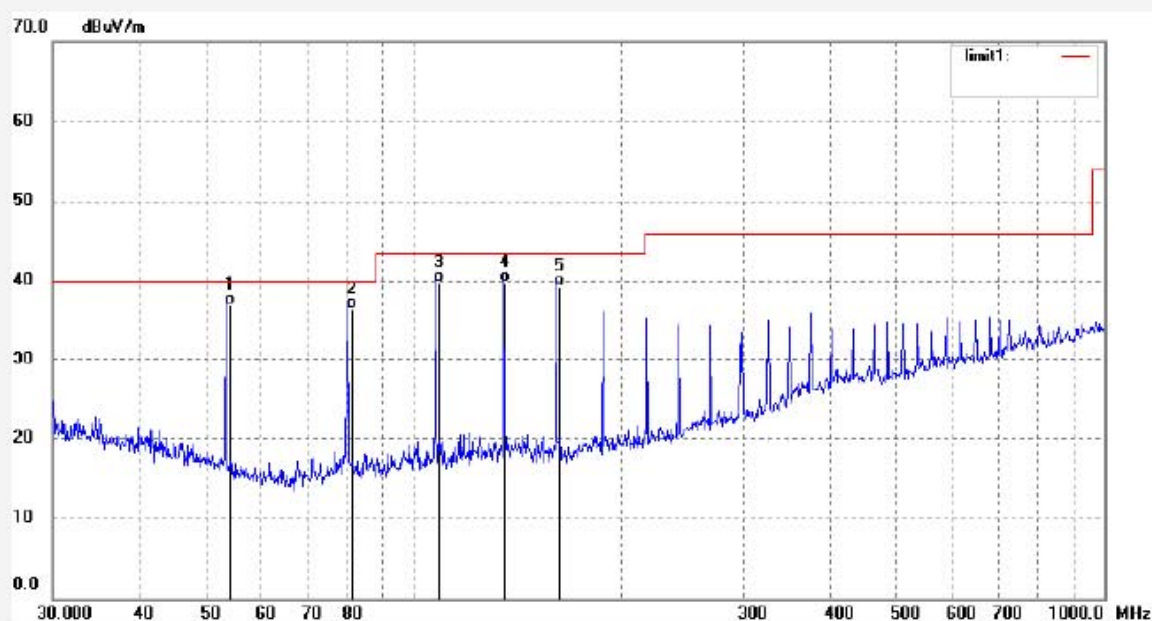
Date: 10/04/06/

Time: 11/42/11

Engineer Signature: Joe

Distance: 3m

Note: Sample No.:100581 Report No.:ATE20100550



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	54.5110	23.73	13.20	36.93	40.00	-3.07	QP			
2	81.7690	22.60	13.82	36.42	40.00	-3.58	QP			
3	109.0210	25.74	14.09	39.83	43.50	-3.67	QP			
4	136.2750	25.17	14.62	39.79	43.50	-3.71	QP			
5	163.5260	24.67	14.64	39.31	43.50	-4.19	QP			

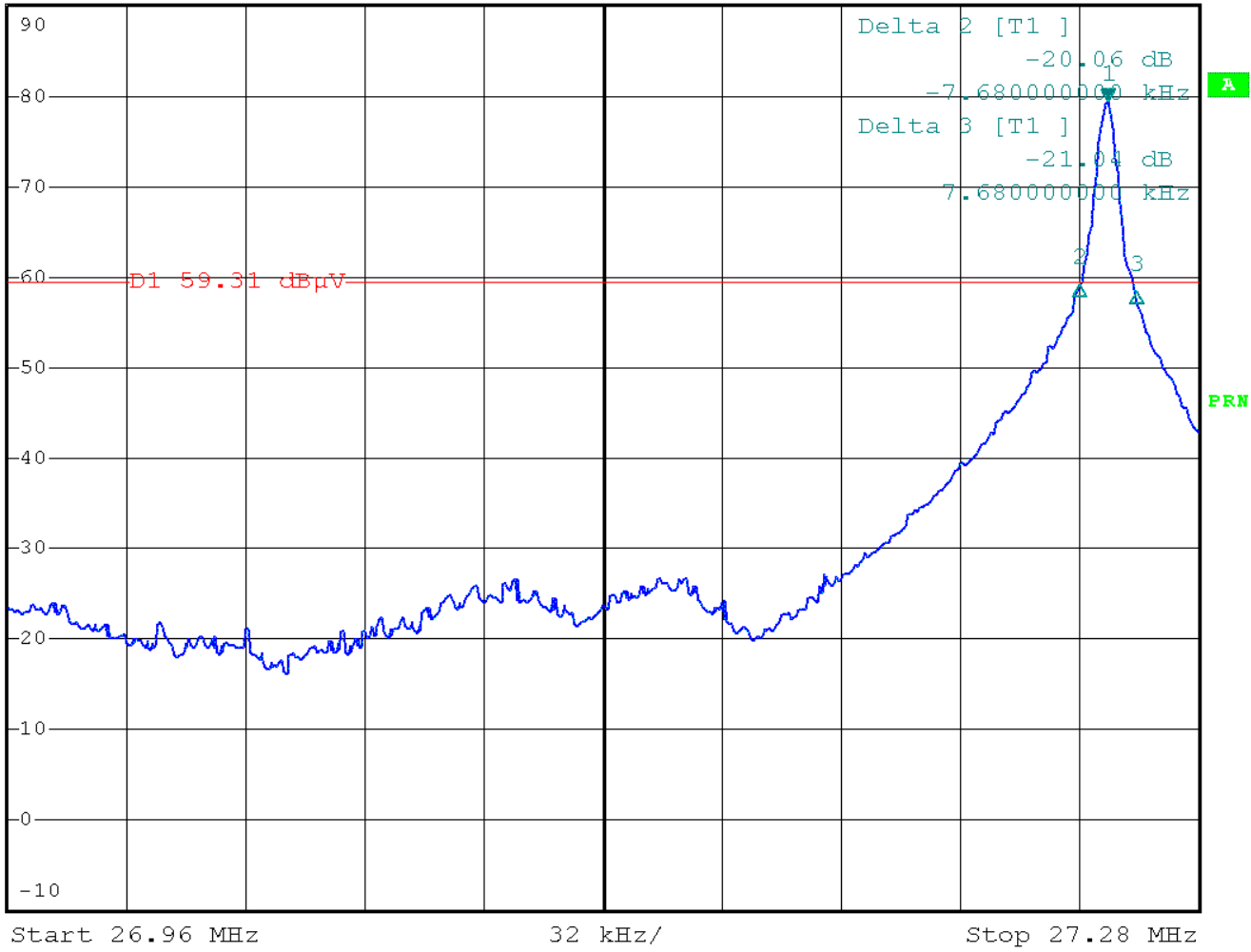


*RBW 3 kHz Marker 1 [T1]
VBW 10 kHz 79.31 dBμV
SWT 40 ms 27.255680000 MHz

Ref 90 dBμV

Att 20 dB

1 PK
MAXH



Comment A:

Date: 8.APR.2010 14:12:44